SnoKing Tap to Monroe-Echo Lake

500-kV Transmission Line

The Bonneville Power Administration's Transmission Business Line (TBL) owns and operates three-fourths of the Pacific Northwest's electric system. BPA is in the process of building new transmission infrastructure projects to improve the distribution of power to meet existing and future power needs.

The SnoKing Tap to Monroe-Echo Lake transmission line is part of a comprehensive plan to maintain reliable electric service to consumers in the Puget Sound area. The project strengthens the connection between BPA's 500-kilovolt grid that brings power across the Cascade Mountains and the 230-kV grid that delivers power to local utilities such as Snohomish County Public Utility District, Seattle City Light and Puget Sound Energy.

Background

The Bonneville Power Administration constructed a new three-pole steel transmission structure to allow the SnoKing Tap to Monroe-Sammamish 230-kV transmission line to connect to the Monroe-Echo Lake transmission line. The SnoKing Tap to Monroe-Echo Lake transmission line was energized on Sept. 29, 2003. As a result, while an increase in noise levels was anticipated, the actual noise levels experienced by landowners in the vicinity of the transmission line and SnoKing substation exceeded those expectations.

Investigation and Conclusion

BPA immediately began an extensive investigation. Early investigation activities included ground observation of the conductor, aerial inspections, tower climbs, numerous noise measurements, and equipment inspections.

After analyzing the research and landowner comments, the scope of the investigation expanded to include the SnoKing substation.

On Dec. 6, 2003, BPA conducted a cleaning activity on one span of the line (tower 6/2 to 6/3) to see if that would decrease the noise levels. Noise measurements taken comparing the clean span with an unclean span showed about a 6 dbA reduction.

A dirty conductor sample taken during cleaning was tested for corona levels at BPA's high voltage laboratory. Dirt "spikes" on the bottom of the conductor were identified as sources of corona noise, especially during mildly damp conditions.

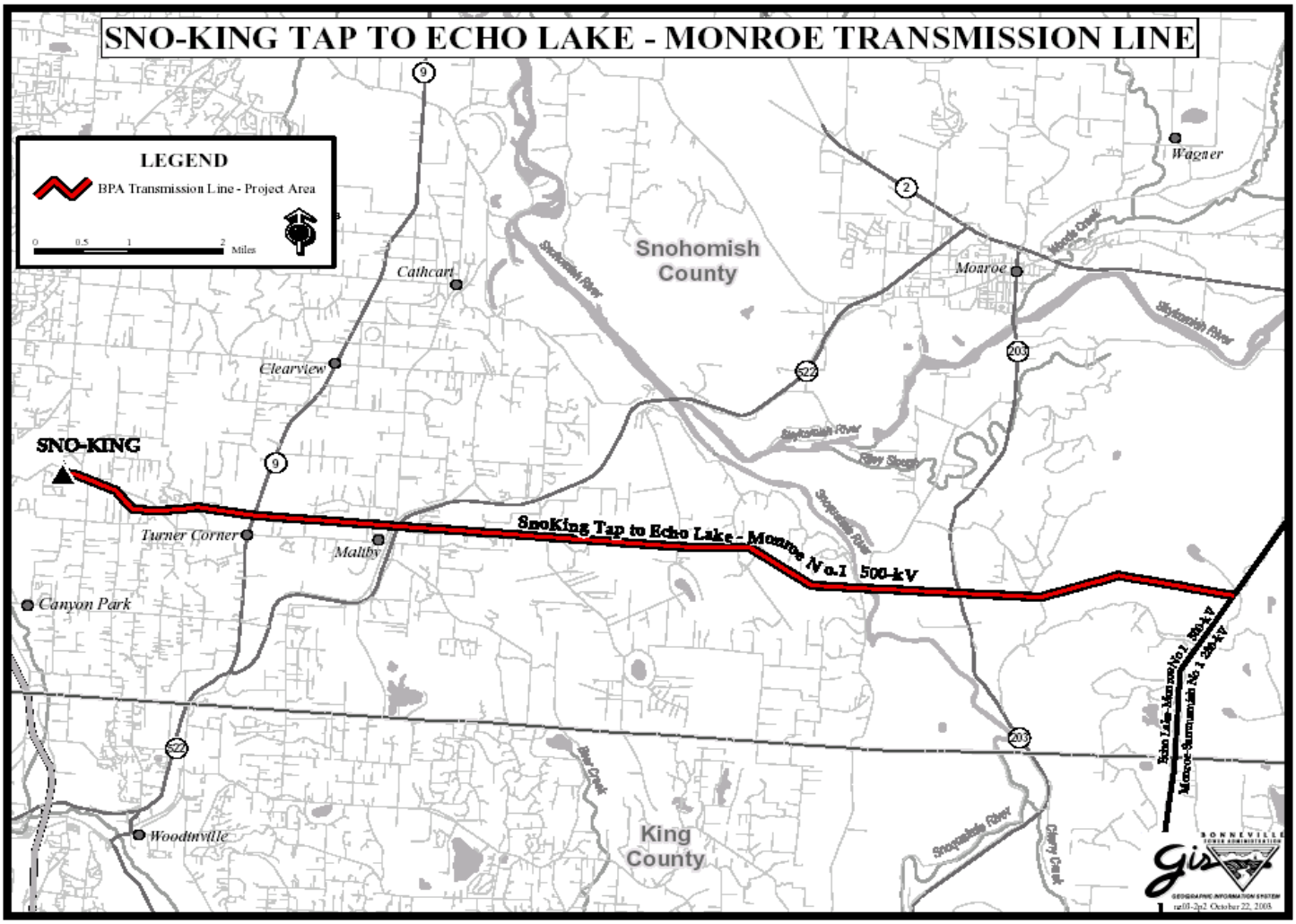
Based on the results of the cleaning activity and laboratory tests, BPA concludes that a general cleaning of the transmission line will reduce the noise during fair weather. BPA's goal is to have this line perform like other 500-kV lines of similar construction.

BPA is still looking at possible solutions for reducing noise near the SnoKing substation.

Recommendation for the Transmission Line

BPA looked at various options for reducing line noise during fair weather conditions including reconductoring the transmission line, reverting back to 230-kV, or moving the transmission line. BPA has determined that cleaning major portions of the transmission line will reduce the noise about 6 dbA in previously very noisy areas during fair weather. A Categorical Exclusion (CX) is being developed to identify potential impacts associated with the conductor cleaning. BPA is designing a device that will mechanically clean the conductor, thus expediting the schedule.

An outage is needed to clean the conductor, and remove and replace all of the spacer-dampers. The cleaning will take a two-week outage, which is tentatively scheduled to take place from Monday, March 29 through Sunday, April 11, depending on outage schedule. The cleaning will require three crews and is estimated to cost $870,000.



This map shows the SnoKing Tap to Monroe-Echo Lake transmission line route.

Recommendation for the Substation

BPA is still exploring several options for reducing noise levels at the SnoKing substation. Research and data collected show a correlation between direct current on the system and the increase in transformer noise. BPA is currently trying to pinpoint the source of the direct current.

In addition, BPA is exploring the option of building a sound barrier around portions of the SnoKing substation. This could reduce noise levels by 20 dbA. BPA has begun preliminary design and cost estimating of a permanent sound barrier wall.

BPA should have additional information about the source of the direct current by April 1, 2004.

Environmental Planning

A Categorical Exclusion will assess the potential impacts of the cleaning methods. The assessment will determine the potential for environmental effects for the proposed cleaning activity. For impacts identified, mitigation options will be developed. When a recommended course of action to address noise at the SnoKing substation is determined, an environmental review will be conducted for the suggested actions.

Questions or Comments

If you have questions or would like more information about the project, please contact BPA toll free at 1-888-276-7790 or visit the TBL web site at *www2.transmission.bpa.gov/PlanProj/Transmission_Projects/*.

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